

# **Informatics**

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## Introduction

New information technologies have allowed for a revolution in how public health data are shared, how public health workers communicate, and how health programs are planned, delivered, monitored, and evaluated. The rise in popularity of the World Wide Web and enhancements to Internet technology have provided easier and faster “on-line” access to all kinds of population-based and personal health information (*Putting Training on Track, National Association of County and City Health Officials, 2004*).

Information and computer science and technology are increasingly important to public health practice, research and learning. Consequently, public health professionals at all levels should be appropriately skilled in the applications of these sciences and technologies to public health. In broad terms, today’s public health professionals must be able to:

- Use information effectively;
  - Use information technology effectively; and
  - Manage information technology projects effectively.
- (Informatics Competencies for Public Health Professionals)*

The purpose of this section is: 1) to discuss Informatics as it is defined within public health practice; 2) to outline Informatics approaches in Washington; and 3) to discuss the role of public health officials related to Informatics.

## Defining Key Concepts and a Public Health Framework

### ***Information, Data and Communications Systems***

Information, data, and communications systems are those elements of public health infrastructure that help public health professionals diagnose the health of populations, distribute resources to the right places, and alert the public to health issues. Public health professionals collect and use data, information, and communications systems to carry out Essential Public Health Services (*Public Health Infrastructure Resource Center*). There are multiple sources, systems, and tools for using data, information, and communication in public health practice.

### ***Public Health Informatics***

Public health Informatics is the systematic application of information and computer science and technology to public health practice, research, and learning (*Yasnoff, 2001*). Public health Informatics is not just a fundamental component of the public health system; it also has a significant impact on the system’s ability to perform its core function of assessment, policy development, and assurance (*The Future of Public Health, IOM, 1988*). Each of these functions is dependent on the use and dissemination of information, which cannot be accomplished without an understanding of the tools of information technology (*NACCHO, 2004*).

### ***Informatics Competencies for Public Health Professionals***

The three classes of Informatics competencies defined in *Informatics Competencies for Public Health Professionals* provide a useful framework for approaching Informatics as a local public health official. The three classes are defined as:

- 1) The use of information for public health practice. This includes knowledge and skills for activities such as:
  - Collecting, summarizing and interpreting information;

- Presenting data and information to diverse audiences; and
  - Identifying and retrieving current relevant scientific literature.
- 2) Use of information technology to increase an individual's effectiveness as a public health professional. This includes knowledge and skills for activities such as:
- Using personal computers and software tools;
  - Using information technology tools to locate, access, assess, interpret and use on-line public health-related data;
  - Using distance-learning technologies to support life-long learning; and
  - Using data and information to support public health decision-making.
- 3) The development, deployment, and maintenance of information systems to improve the effectiveness of the public health enterprise. This includes knowledge and skills for activities such as:
- Decision-making about information systems development and design, and
  - Management of information technology projects;
- ✓ The *Informatics Competencies for Public Health Professionals* are available online at <http://healthlinks.washington.edu/nwcp/phi/comps/>

## **Informatics Approaches in Washington**

The scope of public health Informatics includes the design, development, deployment, refinement, maintenance, and evaluation of communication and information systems relevant to public health. (*Institute of Medicine, 2001*) In Washington State, local health jurisdictions (LHJs) and the Washington State Department of Health (DOH) have created a mechanism for joint planning related to information and communication systems for public health.

### ***The Public Health Improvement Partnership Information Technology Committee (PHIT)***

The Public Health Information Technology Committee (PHIT) was created through the Public Health Improvement Partnership. PHIT provides a forum for coordination of information technology (IT) planning across many separate public health entities so that communication and data transfer systems are compatible, reliable, secure, and cost-effective. This joint state and local committee was created to conduct an information systems planning effort, within the context of the Public Health Improvement Plan (PHIP).

### **Information Technology Planning and Coordination**

Information systems in public health should be designed cohesively to support common business practices, using common system architecture and data standards. Therefore, a major focus of PHIT has been:

- Coordinating IT planning statewide to establish clear minimum technology requirements and security requirements so that public health can provide rapid and secure information transfer and compatible technology;
- Developing data standards; and
- Conducting IT surveys and using survey results to guide training and consultation opportunities.

The need to disseminate and exchange information quickly in the event of a public health emergency makes it imperative to have secure, reliable and compatible communication and

information systems. Making sure that DOH, LHJs and other public health partners can communicate during an emergency is an essential part of emergency preparedness and response efforts. DOH and PHIT have also focused planning on efforts to develop the infrastructure necessary so that DOH and all LHJs

- Have multiple methods of communications;
  - Have secure systems;
  - Have complete and secure access to applications; and
  - Have sufficient equipment (servers, firewalls, routers, etc.).
- ✓ More information about PHIT is available at <http://www.doh.wa.gov/PHIP/InfoTech/default.htm>.
- ✓ The Information Technology chapter of the Public Health Improvement Plan Report is also accessible at this site.

### **Communications**

Through the Information Network for Public Health Officials (INPHO) project, all of the state's LHJs were connected to a high-speed wide area network. The INPHO network was designed and implemented to expand beyond public health and currently the Washington Department of Information Services (DIS) assumes administration of what is now called the Inter-Governmental Network (IGN), which currently connects all state agencies to the state's 39 counties. Each county is treated as a "point of presence" for network connections, and used for further connections to county departments (such as public health), cities, Indian Tribes, emergency response organizations, and other local government entities. This network also provides access to the Internet through DIS.

### **ListSerts**

Use of electronic mail, listservs, bulletin boards and calendars are examples of the daily operational communication applications used by the public health workforce. Several listservs are in place as tools for information and resource sharing, problem solving and policy discussions among public health professionals. DOH facilitates the creation and maintenance of many of these listservs through DIS. There are different types of listservs:

- A *discussion list* allows the subscriber group to distribute information to each other. Each subscriber can respond to postings or post their own message. Current examples: WSALPHO Listserv, Health Officer Listserv.
- A *broadcast list* allows the owner or a designated group of people to distribute information to a subscriber group. This is a "one-way" distribution as subscribers cannot respond to postings or post their own information. (One-way announcement.) Current examples: Clandestine Drug Labs resource, EPI-Trends Distribution, Health Professions Newsletter distribution.

A list and brief description of some of the listservs of interest to LHJs is included in the *Communication* section of this Orientation.

### **Examples of Health Information and Communication Systems in Washington State**

The joint state and local planning efforts through PHIP have resulted in several projects intended to improve and provide for secure redundant communication and exchange of

information between DOH, LHJs and other public health and emergency response partners. Some of these are briefly described below:

- **Washington State Electronic Communication Urgent Response and Exchange System (WA-SECURES)**

WA-SECURES is a tool for urgent communication and routine document collaboration for public health emergency response partners (public health agencies, hospitals, laboratories, and emergency management agencies) in Washington State.

- **Public Health Issue Management System (PHIMS)**

PHIMS is a secure, web-based application that LHJs can use to investigate and report notifiable conditions in Washington State in accordance with the Notifiable Conditions regulations (WAC 246-101). It has been developed to provide a secure tool and a standard method for LHJs to conduct case investigations and perform case management of notifiable condition events at the community level and report those cases to DOH and ultimately to CDC.

- **Public Health Reporting of Electronic Data (PHRED)**

PHRED is a web-based application that hospitals and laboratories will use to electronically report notifiable conditions to DOH. This reporting includes both infectious and non-infectious conditions, but excludes environmental testing

There are many other data, information, and communication systems used within Washington's public health system for various purposes. A long-term issue has been the number of program-specific databases with differing definitions and requirements and the impact of these multiple systems on LHJs. An underlying cause for this problem is the different data collection requirements of various federal programs.

### ***Health Data***

There are many data sources for use in public health practice, which can be accessed in multiple ways.

- The DOH website contains links to data tables or data you can query online at <http://www.doh.wa.gov/Data/data.htm>

Additional resources are included in the Learning Resource Toolkit.

### ***VistaPHw***

VistaPHw is used across the Washington State public health system as a standardized tool for community health assessment. Assessment, the work of collecting, analyzing, interpreting and sharing information about population health status, is one of the core functions of public health. Through assessment, public health officials and their partners identify their communities' important health issues in order to set local prevention priorities and guide policy decisions. To do this work, they need timely information that is specific to their communities, as well as technology and skills to analyze it. VistaPHw is a menu-driven software package that allows users with diverse computer skills to access and analyze population-based health data.

- More information about VistaPHw is available online at <http://www.doh.wa.gov/OS/Vista/HOMEPAGE.HTM>

## ***Education***

To address both informal (meetings, planning and group problem solving) and formal learning needs (traditional classroom style curriculum), the Internet is used in combination with audio teleconferences, video conferences, satellite teleconferences, a videotape lending library and classroom experiences to increase access for a geographically dispersed workforce. While the Intergovernmental Network system connects state and local public health agencies for computer applications, other technology infrastructure is more fragmented. Some local health jurisdictions have purchased their own equipment (such as satellite dishes or compressed video), but most of the existing telecommunications systems (other than telephones) are negotiated through partnerships with other health and educational systems. DOH provides access to these resources through the Washington Public Health Training Network (WAPTHN).

- ✓ More information about WAPTHN is available online at <http://www.doh.wa.gov/wapthn/default.htm>

## **Applying Informatics to Practice**

### ***Roles and Responsibilities***

Public health officials must focus on Informatics at multiple levels: individual, organizational, community, and system. Among the roles and responsibilities for public health officials at the organizational level are:

- Providing the leadership and vision for using information technology effectively;
- Assuring the collection and analysis of data and information for supporting decisions;
- Assuring the legal and ethical use of information within the agency; and
- Understanding of the specific requirements for Informatics training needed by staff.

### ***Administrative Capacity Standards***

The Administrative Capacity Standards currently under development as part of the *Standards for Public Health in Washington State* will provide a useful tool for assessing Informatics capacities at the organizational level. These standards address issues such as:

- Information technology policies and procedures;
- Computer hardware and software;
- Information technology staff
- Training
- Data security and confidentiality

### ***Legal and Ethical Issues: Privacy and Confidentiality of Information***

Washington has a comprehensive statute, the Uniform Health Care Information Act (RCW 70.02), governing the access to and disclosure of health care information maintained by health care providers. Washington also has numerous other laws protecting the confidentiality of health information in specific situations.

The Health Insurance Portability and Accountability Act (HIPAA) also includes extensive regulations for the release of personal medical information by providers and any other agents involved in sharing medical information. Local public health officials should be familiar with these rules and regulations and the implications for LHJ operations. More information about HIPAA is available on the DOH website at <http://www.doh.wa.gov/OS/HIPAA/hipaalinks.htm>, and in the Learning Resource Toolkit.

